

For Reference

NOT TO BE TAKEN FROM THIS ROOM

For Reference

NOT TO BE TAKEN FROM THIS ROOM

Ex LIBRIS
UNIVERSITATIS
ALBERTAEANAE



1969(F)
53

UNIVERSITY OF ALBERTA

CONCEPTUAL COMPLEXITY AND PARENTAL
CHILD REARING PRACTICES

BY
C ROGER A. DAVIS

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL 1969

UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Conceptual Complexity and Parental Child Rearing Practices" submitted by Roger A. Davis in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

The relationship between Rigidity, Conceptual Complexity of 249 grade seven Edmonton students; and Parental patterns of punishment-reward, Parental authoritarianism and irritability, and socio-economic status were investigated.

In a multiple linear regression design Socio-economic Status was found to be related to both the social and intellectual domains of Conceptual Complexity but not to Rigidity. In addition a curvilinear relationship was found to exist between some measures of punishment and reward.

ACKNOWLEDGEMENTS

The writer wishes to acknowledge his indebtedness to the many individuals who contributed to the completion of this thesis.

Heartfelt gratitude is expressed to Dr. C. C. Anderson, chairman and teacher, for his patience, timely encouragements and interventions which made this thesis a rare learning experience not often experienced by the writer.

Gratefully acknowledged are the helpful comments and advice of Dr. L. Stewin, Dr. Jenkinson and Dr. A. Bower; the permission of Dr. E. Mansfield to conduct the investigation within the Edmonton Public School Board; the excellent cooperation of the administrators, teachers, students and parents involved in the data collection; the guidance offered by Dr. D. Flathman and the staff of the University of Alberta Division of Educational Research Services; and to my friend, mentor, and therapist who, perhaps, suffered more than the writer, my wife.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
Conceptual Complexity Defined.	1
Conceptual Systems and Their Development .	3
Training Conditions	5
II. RELATED RESEARCH INTO CHILD TRAINING	
VARIABLES	7
Punishment and Reward.	7
Authoritarianism and Rigidity.	9
Socio-economic Status.	11
Hypothesis	15
Predictions	16
III. METHOD AND PROCEDURES	17
Population and Sample.	17
Study Procedure	18
Instrumentation	20
Analysis	26
Factor Analysis of Parent Test Scales .	26
Support for Predictions.	26
IV. RESULTS.	29
Introduction	29
First Prediction	32
Second Prediction	34
Third Prediction	35

CHAPTER	PAGE
Fourth Prediction	35
Fifth Prediction.	36
V. CONCLUSIONS AND SUMMARY	38
Conclusions	38
Socio-economic Status	38
Punishment and Reward	38
Summary	41
BIBLIOGRAPHY	43
APPENDIX A: Student Tests	52
APPENDIX B: Parental Questionnaires	66
APPENDIX C: Letters to Parents.	76
APPENDIX D: Results of PARI and Form PR Principal- Component Factor Analysis	79

LIST OF TABLES

TABLE	PAGE
I. Summary of Parent Questionnaires Returned	17
II. Description of Categories Form PR	24
III. Source and Names of Variables	30
IV. PCT Total as Criterion Without Interaction Variables	32
V. Association IV as Criterion - Without Interaction Variables	33
VI. PCT Total as Criterion with Interaction Variables	33
VII. Association IV as Criterion with Inter- action Variables.	34
VIII. Intercorrelations Between PARI and Form PR	80
IX. Factor Analysis of Form PR and PARI Short Form Scales for Mothers Varimax Rotation.	83
X. Factor Analysis of Form PR and PARI Short Form Scales for Fathers Varimax Rotation.	84

CHAPTER I

INTRODUCTION

The purpose of the following study was to investigate if there exists a relationship between socio-economic status, parental punishment-reward patterns, parental warmth and authoritarianism and the social and intellectual domains of Conceptual Complexity,¹ in children at the grade seven level.

Conceptual Complexity Defined

Schroder, Driver and Streufert (1967) define conceptual complexity structurally in terms of the number of parts or dimensions and the number of integrating rules (schemata) with which the dimensions can be integrated.

A simple illustration of the development of complexity is given by Inhelder and Piaget's description of the development of ascending and descending order of categories in which the rule is of the superordinate type. Early elementary-school aged children are characterized by a type of pre-classificatory behavior, called the stage of graphic collections (Inhelder & Piaget, 1964, p. 19) in

¹L. Stewin, 1969. There are various labels for this concept. Bieri (1955) prefers Cognitive Complexity; Harvey, Hunt and Schroder (1961) prefer Conceptual Complexity; Schroder, Driver and Streufert (1967) now prefer Integrative Complexity. The present writer prefers the term Conceptual Complexity.

which the child groups objects on the basis of simple associationistic notions of "belonging together" which forms a story or object rather than a class. This behavior, which is tied to concrete (empirical) reality, is modified in a series of intermediate steps which are progressively more complex, abstract forms of classification.

This simple associationistic classification is followed by learning rules for class inclusion, class exclusion and quantification. Children over eight years of age become increasingly able to produce hierarchical orderings, recognizing additive groupings and quantitative relationships within the hierarchy. In some way they learn to hold or fixate the superordinate class, and quantify the relationship between the subordinate and superordinate classes. These stages clearly illustrate the concept of sequential, simple-to-complex rule learning, and the progressive chronological emergence of more abstract schemata.

In terms of the earlier work of Harvey, Hunt and Schroder (1961), the simplest level (little differentiation and integration) would correspond to concrete behavior while the most complex levels (greater differentiation and more integrative rules) would correspond to abstract behavior. This represents the cognitive view that any abstract symbolic problem-solving behavior involves a freeing of the individual from a dependence on the concrete

world (Bruner, 1966).

The factorial structure of conceptual complexity in a sample of school children has never been extensively dealt with. As yet unpublished works by Bower (1969), Stewin (1969) and Anderson, Gardiner and Flathman (1968), support the position that complexity is domain specific rather than a general function across various domains. In particular, Crouse, Karlins and Schroder (1968) consider Schroder's Paragraph Completion Test as a measure of interpersonal (social) complexity. Other domains isolated by Anderson, Gardiner and Flathman include the intellectual and religious. Accordingly, measures of intellectual and social complexity were chosen for the present study.

Conceptual Systems and Their Development

Harvey, et al., (1961) postulated that, within every stage of development, there exists a dimension of complexity which can be described in terms of four systems (levels, stages).

System I functioning is characterized by such behaviors as high absolutism and closedness, high positive dependence on authority, high social identification and conventionality and strong ethnocentrism. It is theorized that cessation of development at this level is due to training conditions in which the individual's exploration of the environment has been restricted, particularly the

exploration of values, social norms, and power relationships. This minimal exposure to diversity is accompanied by reward and punishment being contingent upon conformity to the trainer's standards (Harvey, 1966).

System II functioning is characterized by a general rebelliousness against social prescriptions and standards, and is thought to result from capricious and arbitrary child-rearing practices which fail to provide a stable or predictable frame of reference. This unstructured world presents the child with too much diversity and results in the individual developing deep feelings of uncertainty, distrust, and rejection while failing to provide internally derived standards of behavior.

Although it results from childhood over-protection and over-dependence, System III functioning is still more abstract. The child develops fairly high cognitive skills through manipulation of his parents, but these are oriented toward the establishment of dependency relationships. The System III child develops some autonomous personal standards and fairly positive ties to the prevailing social norms, but he is basically incapable of functioning in an independent manner.

System IV functioning is at the most abstract end of the continuum and is regarded as being the consequence of a training environment marked by freedom, not only to explore the physical and social environments, but also to

establish values based on one's own experience, and to solve problems independently, without fear of punishment.

The System IV representative, who is the recipient of diversity along with stability, as a developing child ... comes to have a highly differentiated cognitive structure and consequently to be more flexible, more creative and more relative in thought and action (Harvey, 1966, pp. 45-46).

Training Conditions

Parents, teachers and other trainers create different environments to which a child must adapt. These environments (training conditions) are theorized to be antecedent to the development of different levels of cognitive structures. The training agent can provide the child with ready-made rules and controls via rewards and punishments until the child learns the required responses, creating an environment in which the trainee learns to adapt by looking for external schemata (Harvey, Hunt & Schroder, 1961; Schroder and Harvey, 1963). Under these conditions learning may be inadequate, in that other methods may lead to faster and more effective learning and more important, from the structural view, other methods may facilitate the evolution of more complex levels of information processing. The difference in the way the information is used for adaptive purposes is the focus of interest of this theory, hence unilateral training is seen as endangering the potential development of abstract structural properties.

An alternative method of training is to give the child an environment that can provide information as feedback, or as a consequence of his own questions or exploratory behavior (interdependent or inductive; Harvey & Hunt, 1961). The agent does not provide any ready-made schemata or rules of integration; the trainee is required to generate these himself. The environment encourages the evolvement of complex integrative rules without interference by the training agent. The training agent creates an autotelic environment (Anderson & Moore, 1959) and encourages the child to explore it.

The two extreme training conditions are illustrated as end points along a continuum and correspond to System I and System IV stages of Harvey's (1966) account of the development of cognitive systems. At one end, unilateral conditions provide for a level of diversity that leads to the development of concrete structure, while at the other end, interdependent training conditions of optimal diversity for the evolvement of flexible rules of integration lead to an abstract structure. In the unilateral condition, the subject learns a response pattern through an adaptive orientation characterized by applying fixed rules; in the interdependent condition, the subject learns a response pattern through an adaptive orientation characterized by applying self-generated rules.

CHAPTER II

RELATED RESEARCH INTO CHILD TRAINING VARIABLES

Punishment and Reward

Explicit in the early work of Harvey, Hunt and Schroder (1961) was the hypothesis that nurturance is exclusively necessary to the development of complex conceptual functioning. In general, it was theorized "that the absence of externally administered punishment represents an overall operation for interdependent training (Harvey et al., 1961, p. 124)." Presumably, the negation of reward would be the ignoring of undesirable behavior.

More recently, Schroder has significantly changed his position on this matter. First, he and his associates (1967, p. 90-94) have postulated that inverted U-shape relationships exist between punishment, reward and conceptual complexity, a position which implies the possibility that the most complex person is a product of a training environment in which reward is, to some unspecified degree, mixed with punishment (the administering of a noxious stimulus or the withdrawal of privileges). Second, in his paper with Crouse and Karlins, Schroder (1968) describes a nuturant but firm upbringing for his complex adults.

This position would be supported by the experimental

research data of Warden and Aylesworth (1927) and Whiting and Mowrer (1943) on discrimination learning, and by reviews of literature on punishment (Solomon & Brush, 1956; Deese, 1958; Church, 1963) and more recently Solomon (1964). Some psychometric research data (Brown & Elliott, 1965; Hewitt, 1967; Krasner & Ullman, 1965) have reported the facilitative effect of negative reinforcement, mild punishment and positive reinforcement in combination to shape desirable behavior in management-problem children, while Moulton, et al., (1966) reports that in families where both parents were rated as affectionate and equally demanding, students were generally rated as well adjusted by researchers. From clinical observations, Bettelheim (1969) concluded that it is essential that children learn to "fear" something before entering society (the school) in order to develop a measure of "self-control". Bettelheim postulated that this "self-control" can be brought about through the use of threats of loss-of-parental-love techniques.

Experimental research (Masserman, 1943; Gantt, 1944; Maier, 1949; Masserman & Pechtel, 1953; Brady, 1958) would seem to support the earlier position of Harvey et al., (1961) that punishment techniques of controlling behavior result in emotional reactions of a neurotic and psychotic nature while only temporarily suppressing undesirable responses.

The psychometric research data and clinical observations which would seem to support Harvey et al., (1961) has dealt primarily with the personality traits of authoritarianism and rigidity.

Authoritarianism and Rigidity

From the viewpoint of earlier investigations on the effects of parental training the autonomy-control dimension (Bell & Schaeffer, 1960) appears similar to the unilateral-interdependent dimension as developed by Harvey and his associates and seems to be a parental variable affecting children's conceptual development (Becker & Krug, 1965).

Radke (1946), Symonds (1939) arrived at the general conclusion that parental restrictiveness and dominance are antecedent to childrens' passivity, social withdrawal and generally inhibited behaviors. Baldwin, Kalhorn, and Breese (1945) found that democratically reared children were more relaxed, efficient, flexible, and adaptive to school. Peck (1958) noted a strong relationship between autocratic reading techniques and strong compartmentalized super-ego functioning in adolescents. Hart (1957) found a significant relationship between "non-love oriented" techniques of punishment and high authoritarianism of the child. Siegelman (1966) noted that boys who perceived their parents as punitive tended to be regarded as "withdrawn" by their peers.

Although there has been little experimental work specifically directed at assessing parental effects on children's conceptual development, two related studies have been conducted. Witkin, Dyk, Faterson, Goodenough and Karp (1962) found that mothers of less differentiated children (field dependent) were described as interfering with separation, preventing the assumption of responsibility and stressing conformity. In contrast, mothers of more differentiated (field independent) youngsters encouraged their children to assume responsibilities and activities in keeping with their age (Ibid., p. 284).

Cross and Kawash (1968) have devised a short form of Schaeffer and Bell's (1959) Parental Attitudinal Research Instrument (PARI) which yields measures of authoritarianism and warmth. Using this instrument, Cross and Kawash (1968) found that sons of high non-authoritarian families are higher in conceptual level than sons of low non-authoritarian families and concluded that the relationship between parental training conditions and boys' conceptual level supports the general developmental notions of Harvey et al., (1961). It is also in accord with earlier theoretical writings (Adorno, Frenkel-Brunswick, Levinson & Sanford, 1950) and with recent reviews of the literature (Becker, 1964).

Further, the research indicates a close relationship between rigidity of response and authoritarianism (Adorno,

et al., 1950; Brown, 1953; Zelen, 1955) and between the development of rigidity and autocratic, punitive child-rearing practices (Baldwin, Kalhorn & Breese, 1949; Brown, 1953; Hart, 1957). Brown (1953) described the child training practices underlying what he calls the rigid, anxious, authoritarian personality of marginal income families as an attempt to safe-guard or enhance their status and punitive in order to suppress those inclinations of the child which might threaten that status. The result of these practices is that the conceptual orientation of the child are directed towards the achievement of rigid, externally defined goals.

Harvey (1966) reports that, in five separate samples, System I subjects were found to be significantly more rigid than any other system representatives, while System IV individuals were significantly less rigid as measured on the Gough and Sanford (1952) Scale of Rigidity.

Socio-economic Status

Research on the influence of socio-economic status (SES) as a variable affecting childrens' conceptual behavior takes two forms. First, there is the matter of what values high SES (upper and middle class) and low SES (working class) parents emphasize in their children and the influence of these value orientations on the amount and type of punishments and rewards used. Secondly, the research

indicates that there are differences in the stimulus complexity of the environments associated with the different levels of SES.

It may be that socio-economic class differences in parent-child relationships are a product of differences in parental values, with middle-class parents' values centering on self-direction and working-class parents' values on conformity to external proscriptions. These differences stem from different conditions of life, particularly occupational conditions, with middle-class occupations requiring a greater degree of self-direction and working-class occupations requiring that one follow explicit rules set down by someone in authority (Kohn, 1963).

The empirical evidence (Duval, 1946; Klackholn, 1951; Kohn, 1957; Carol, 1959, 1960; Inkeles, 1960) clearly indicates that how one rears one's child is profoundly influenced by class membership. Working-class parents stress conformity and obedience to externally imposed standards; while middle-class parents stress internal self-control, self-evaluation, curiosity and exploratory behavior. To working class parents it is the overt act that matters; to the middle-class parents it is the child's motives and feelings that matter. Bronfenbrenner (1958) states that in matters of discipline working-class parents are more likely to employ physical punishment, while middle-class families rely more on reasoning, isolation,

appeals to guilt and other methods involving the threat of loss of love. Roe and Siegelman (1953) and Sears, Maccoby, and Levin (1957) report that the higher the socio-economic level, the more loving the parents while Sears et al., (1957) report that middle-class mothers were somewhat warmer, gentler, and more permissive towards their children than working-class mothers.

Schroder et al., (1967) have demonstrated that the degree of environmental complexity appears to be central in the development of conceptual (integrative) complexity. Overly simple environments which fail to present sufficiently diverse and/or numerous dimensional units of information, fail to stimulate the processes of integration.

A study, in which the cost-reward levels were kept sub-optimal and relatively constant while environmental load varied from low to high, was conducted to explore the hypothesized (Schroder et al., 1967) curvilinear relationship between environmental complexity and the differentiation and flexibility of integration involved in decision making. The task was originally used by Brooks and Lawrence (1962) and progressed through many modifications in the Princeton Laboratory (Frost, 1963; Schroder, Streufert & Weeden, 1964; Streufert, Graber & Schroder, 1964). A variable program (Streufert, Clardy, Driver, Karlins, Schroder & Suefeld, 1965) and a fixed program (Karlins, Streufert, & Schroder, 1965) fully describe the experimental

procedure. In summary, the results of these experiments showed that increasing environmental complexity and load had the effect of first increasing the degree of flexibility of integration involved in decision making to an optimal peak and then causing it to diminish as "overload" occurred. This effect was found for all measures of integration in decision-making and occurred in all groups in the studies.

Experimental studies done with animals (Hebb, 1937; Thompson & Melzack, 1956; Cruze, 1935; Riesen, 1947; Riesen, Kurke & Mellinger, 1953; Siegel, 1953; Krech, 1965) all support the theory that the amount of stimulation present in the environment markedly affects mental activity and development. More directly, Kirk (1958), Lees (1951) and Alexander (1961) using human subjects have shown the effects of stimulation on increasing measured intelligence, reading comprehension and achievement. Studies by Dennis and Najarian (1957), Kirk (1958), Wheeler (1942) and Sontag (1958) all support the thesis that a deprived environment will have a depressing effect and an abundant environment an enhancing effect on childrens' achievement in school.

There is further evidence of a positive relationship between processing level and increasing sub-optimal environmental complexity in a study by Suedfeld (1964) in which he subjected one group of subjects to extremely sub-optimal conditions of sensory deprivation, while his control group

experienced mildly sub-optimal input. He measured the degree of integration involved in the process of attitudinal change amongst the teams, which were composed of individuals of varying levels of abstractness. The external input level for the deprivation group was depressed to nearly zero, while the control subjects were in a more normal, though still sub-optimal, environment. He found that the deprivation group as a whole showed a very significant shift toward an external anchor, while the control group did not show a significant shift.

Studies using SES as the independent variable (Curry, 1962; Manley, 1959; Hill & Giammetto, 1963) have found that children from higher SES families are decidedly superior on tests of achievement, vocabulary, reading comprehension, arithmetic skills and problem solving, than are children of equal intelligence from lower SES families. Further, the effects on achievement of deprivation and stimulation in the environment have been documented in studies using identical twins raised apart, children in institutions and experimental studies with animals.

Hypothesis

The preceding survey of the research allows the hypothesis that the level of conceptual complexity in either the intellectual or the social domain will be positively related: to rigidity; to socio-economic

differences; to an upbringing characterized by differential reinforcement, that is, one which combines reward for desirable behavior and punishment for undesirable behavior.

Predictions

(1) Socio-economic Status and the PCT Total Score

A statistically significant positive relationship exists between socio-economic status and the social domain of conceptual complexity.

(2) Socio-economic Status and the Associations

IV Score

A statistically significant positive relationship exists between socio-economic status and the intellectual domain of conceptual complexity.

(3) Socio-economic Status and Rigidity

A statistically significant positive relationship exists between socio-economic status and rigidity.

(4) Punishment-Reward and the PCT Total Score

A statistical significant relationship exists between punishment-reward and the social domain of conceptual complexity.

(5) Punishment-Reward and the Associations IV Score

A statistically significant relationship exists between punishment-reward and the intellectual domain of conceptual complexity.

CHAPTER III

METHOD AND PROCEDURES

Population and Sample

Schroder's Paragraph Completion Test (PCT), Guilford's Association IV Test from the Kit of Reference Tests for Cognitive Factors (French *et al.*, 1963) and a test of rigidity (Form R) constructed by Fitzgerald (1969) were administered to 417 grade seven students in three Edmonton Public Junior High Schools. The testing was followed by the distribution to each student's parents of the Cross and Kawash Short Form of the Parental Attitudes Research Instrument (PARI) and a questionnaire (Form PR) designed by the writer to survey parental attitudes regarding child-rearing practices and the reward and punishment of children. The total sample for which complete data was available was 251.

TABLE I
SUMMARY OF PARENT QUESTIONNAIRES RETURNED

	<u>Mothers</u>	<u>Fathers</u>	<u>Total Parents</u>
Number of Possible Returns	413	368	781
Number Returned	318	277	595
Per Cent Returned	78.9	75.3	76.2

Since the author was examining parental attitudes toward child-rearing as possible correlates of cognitive complexity, it seemed important to select a sample of children with whom the parents were still actively involved in making decisions based on their present attitudes. The grade seven level seemed to be the earliest age for which the available testing instrument, the PCT, would be appropriate.

The three schools, King Edward, Ritchie, and Avalon Junior High, were recommended by the Edmonton Public School Board as being representative of a cross-section of socio-economic status, I.Q., and achievement.

The writer performed "t" tests between the sample ($N=251$) and experimental population ($N=417$) means for the following variables: PCT Total score ($t=0.813$, $p=0.21$), Associations IV ($t=1.48$, $p=0.078$), Sex ($t=0.52$, $p=0.30$) and I.Q. ($t=1.48$, $p=0.69$).

The size of the experimental population ($N=417$) was governed by such considerations as the small numbers of high level conceptual complex subjects found in previous studies (Harvey et al., 1961; Schroder et al., 1966; Gardiner, 1968; Stewin, 1969) and the loss of complete data due to the survey method.

Study Procedure

The students were tested with the PCT, Associations

IV, and Form R during the last week of May, 1969. Following the testing the nature of the study and the importance of the completion and return of the parental questionnaires was stressed to the students. Following this explanation the parental questionnaires were distributed to the students and the home room teachers were asked to supervise their return.

A letter accompanying the parents questionnaires (Appendix B) requested that the parents fill out and return the questionnaires to the schools in a sealed envelope. After a two week period a second set of questionnaires and a second letter (Appendix C) was sent home via the students to those parents who had not responded and, further, each non-responding parent was contacted by telephone. During the month of July each remaining parent who had not responded was visited at home by the writer and requested to fill in and mail their questionnaires to the authors.

Sex, age, I.Q., and achievement of the students were obtained from cumulative records and were expected to approximate normal distribution. Conceptual complexity was expected to be measured by two instruments, Schroder's PCT and the French Kit's Association IV Test.

Parental occupation and marital status was obtained from both the cumulative record and the Parental Data Sheet which accompanied the parents' questionnaires. Socio-economic status was derived from the occupational status

using the Blishen Socio-economic Index for Canadian Occupations.

Measures indicating the nature of the parental training environment were obtained from the short-form of Bell's (1958) Parental Attitude Research Instrument (PARI), which purports to measure parental authoritarianism and warmth. Form PR was expected to give measures of the amount of reward and punishment and a measure of direct-object and symbolic-love methods of rewarding and punishing.

Instrumentation

The Paragraph Completion Test (PCT) is a semi-projective instrument consisting of a series of six sentences stems which imply (a) the presence of alternatives, uncertainty, or absence of structure, (b) the imposition of external standards, and (c) interpersonal conflict (see Appendix A).

A time limit of two minutes per stem was imposed during the administration. This test was scored by the criterion outlined in Schroder et al., (1967, pp. 189-198). Schroder et al., (Ibid., p. 190) suggests that satisfactory inter-rater reliability can be attained within four days once raters become familiar with the theoretical framework. Stewin (1969) notes that Schroder et al., report inter-rater reliabilities of .80 to .95; Reed (1966, p. 25) reports inter-rater reliabilities of .79 to .87; Mishra

(1964, p. 55) reports .99. In this study an inter-rater reliability of .89 was obtained.

The Association IV Test (Guilford *et al.*, 1952) asks the subject to produce a linking word which has a different meaning in relationship to each of a pair of words (Appendix A). The test is composed of two sections, each composed of fifteen pairs, and each section is allotted seven minutes for completion. A score of 1 is given for each correct response and a total score is obtained by summing the number of correct responses.

The Associations IV Test was proposed as a complexity measure by Gardiner (1968, p. 54), Sieber and Lanzetta (1966, p. 569), and later used by Stewin (1969). Stewin (1969) noted that a split half reliability of .75 was reported by Reed (1966, p. 26) and Gardiner (1968, p. 61) reported an intercorrelation of .27 between the Associations IV Test and the PCT. The author found a correlation of .21.

Stewin (1968) reports that the various approaches to the concept of rigidity can be classified under the assumption of either a "general" or "specific" structure of rigidity. Studies which tend to contradict a general factor of rigidity are reported by Luchins (1949), Goodstein (1953), Applezweig (1954), Schaie (1955), Wolpert (1955), and French (1955). Studies which tend to support rigidity as an entity within personality are reported by

Rokeach (1948), Cowen, Wiener, and Hess (1953), Cowen and Thompson (1951), Schmidt, Fonda and Wesley (1954), and Rubenowitz (1963).

For the purposes of the present study, the rigidity scale (Form R) chosen is expected to give a measure of social rigidity. Each of the twenty-four true false items has been selected from previously established rigidity scales and therefore is assumed to have, a priori, construct validity (Fitzgerald, 1969, personal communication). A score of one was assigned to each answer which indicated a "non" rigid response, hence, a high score indicates non-rigidity (low rigidity) and a low score indicates high rigidity.

The Short Form of the Parental Attitude Research Instrument (PARI), (Schaeffer & Bell, 1959) which was designed to assess parental attitudes toward child rearing was modified by Cross and Kawash (1968) to measure two specific attitudes, authoritarianism and irritability. The first factor score, authoritarianism, is formed by summing scores on scales 1, 2, 3, 4, 7, and 8. The second factor score, irritability, is derived by summing scales 5 and 9. The standard PARI scoring technique is used to obtain raw scores. Scoring is reversed for those scales which are scored negatively in order to eliminate negative correlations in the original factor matrices and so that a

high score always indicates "more" of a given variable. Scales 3, 7 and 9 were composed from Zucherman's (1959) reversals and are labelled "reversed". Because of this reversed scoring high scores on the first factor indicate authoritarianism, while high scores on the second factor indicate irritability.

Cross and Kawash (1968) found a significant positive relationship (Pearson $r=0.53$) between the authoritarianism scale and ideological steropathy scale on the Social Science Research Council scales of authoritarianism (SSRC; Stern, Sanford, Lanem, Webster & Christie, 1960), which suggests that people who have liberal, democratic attitudes toward child-rearing tend to be less authoritarian in their ideological beliefs. A significant negative relationship (Pearson $r=-.39$) was found between the PARI Short Form irritability factor and ideological steropathy. Taken concurrently with the negative relationship between authoritarianism and ideological steropathy, it suggests that people can be warm and accepting toward children and still be generally authoritarian.

The Punishment Reward Questionnaire (Form PR) was devised by the writer to obtain a measure of the characteristic behavior of parents towards their children, as perceived by the parent. The same questionnaire was used for both the mother and father. There are four scales,

TABLE II
DESCRIPTION OF CATEGORIES
FORM PR

Direct-Object Reward	These include tangible rewards such as gifts of money or toys, special trips, or relief from chores.
Direct-Object Punishment	These include physical punishment, taking away play things, reducing allowances, denying promised trips, and so on.
Symbolic-Love Reward	The parents using this kind of reward praise their children for approved behavior, giving them special attention, and are affectionately demonstrative.
Symbolic-Love Punishment	Such punishments include shaming the child before others, isolating him, and withdrawing love.

consisting of five items each, based on the work of Sears, Maccoby, and Levin (1957) for behavior characterized as Direct-Object Reward, Direct-Object Punishment, Symbolic-Love Reward, and Symbolic-Love Punishment. Each item is a revision of an item found in the Parent-Child Relations Questionnaire (Roe & Siegelman, 1963) and is assumed to have a priori face validity. The reward scales were scored so that a high score would indicate low reward while scoring for the punishment scales was reversed so that a high score would indicate high punishment. Therefore, high total score would indicate low reward and high punishment, while a low total score would indicate high reward and low

punishment. The scoring of the Direct-Object Punishment scale was reversed and added to the Direct-Object Reward scale to obtain a Direct-Object Method score, similarly; the Symbolic-Love Punishment scale was reversed and added to the Symbolic-Love Reward scale to obtain a Symbolic-Love Method score.

The Blishen Socio-economic Index, which is comprised of an occupational scale using 1951 census data, classified occupation according to a variety of characteristics, including income and years of schooling. Correlations between the Blishen ratings and ratings of occupational prestige were found to be very high (.94 between Canada and the U.S.) giving some indication that the occupational scale reflects the same variables as do prestige scales. A revision of the Blishen scale, using 1961 census data, was made in 1967. In order to include some measures of social standing of each occupation, Pineo-Porter scale scores, which indicate occupational prestige, were used as a dependent variable and income and educational levels were used as independent variables to construct a regression equation. The regression weights were then applied to all occupations in the 1959 scale to derive the 1967 index of socio-economic status.

Despite the use of a scale which concentrates on the criterion of occupation, it is recognized that social class

is made up of a complex network of interrelated variables. It is, however, argued, that occupational status is an extremely reliable indicator that these other influences exist. Sears, Maccoby and Levin (1957) say that class-status is more a function of occupational level than any other single factor. Kohn (1963) emphasizes that prestige based on occupational level is a fundamental criterion of class. Kahl and Davis (1955) found that occupational position underlay nineteen other different indicators of socio-economic status.

Analysis

Factor analysis of parent test scales. Principal-Component Factor Analysis (Harman, 1960), a mathematical technique which permits the consideration of several test scores in terms of fewer dimensions, was used. In the present study, the Parental scale scores (9 from the PARI Short Form and 4 from the Form PR) were pooled, inter-correlations of the scales were calculated, and the factor loadings expressing the correlation between the scales and the common variable factors were obtained. It was hoped that the latter would provide dimensions common to several scales (see Appendix D).

Support for predictions. The data was subjected to Multiple Linear Regression analysis (Flathman, 1968) which

permits the use of continuous variables and the ranking of variables in terms of their contribution to the total variance accounted for by the analysis.

The following full model was used respectively with the PCT scores, Associations IV scores, and Form R scores as the criterion:

$$Y_i = A_0 F + A_2 X_2 + A_3 X_3 + \dots A_k X_k + E_f$$

and compared to the restricted model which included all independent variables with the exception of the one being tested for contribution to the variance. To investigate the contribution of one of these variables, say X_1 , controlling for the remaining variables, a restricted model was written:

$$Y = A_0 R + A_2 X_2 + A_3 X_3 + \dots A_k X_k + E_r$$

which incorporates the restriction of the null hypothesis ($A_1=0$) that X_1 makes no contribution. The F test was then calculated using the squared-multiple-correlation value by:

$$F = \frac{(R_f^2 - R_r^2) / (df_1 - df_2)}{(1 - R_f^2) / (N - df_1)}$$

The F-ratio test is then used to compare the squared multiple-correlations of the full and restricted models where:

R_f^2 -- is the squared-multiple-correlation from the unrestricted (full) model

R_r^2 -- is the squared-multiple-correlation from the restricted model

$df_1 = P_1 - P_2$

$df_2 = n - P_1$

P_1 -- is the number of independent predictors in the unrestricted model

P_2 -- is the number of independent predictors in the restricted model

n -- the total number of cases.

A test of curvilinearity was performed (Flathman, 1968, p. 24) by squaring the Parental Scores and the interactions between these terms (Ibid., p. 28) were included in a second analysis as control variables.

CHAPTER IV

RESULTS

Introduction

Table III is presented as a key to the abbreviations which are used in other tables because of the complexity of the number of variables.

In addition to the Parental Scores obtained from the data, variables were generated, which were each Parents Scale Scores squared, to check for the presence of a curvilinear relationship (Bottenburg and Ward, 1963; Flathman, 1968, p. 24). The first multiple regression analysis, in Table IV and V, included: the linear variables, scale scores taken to the first power; and the curvilinear variables, parental punishment-and-reward variables taken to the second power. A second multiple regression analysis, in Tables VI and VII, was performed which included all two-way interactions between the squared Parental punishment-and-reward variables, in order to achieve control for these interactions (Flathman, 1968). In Tables IV through VII¹ the variables are arranged in descending order of significance and a cutting point of $p \leq .05$ was used to test the predictions.

¹A list of the variables used in each analysis may be found in Appendix E.

TABLE III
SOURCE AND NAMES OF VARIABLES

Variable	Source	Student	Mother	Father	Parents
<u>Criterion</u>					
Conceptual Complexity	Schroder's Paragraph Completion Test	PCT			
Associations IV	French Kit of Cognitive Factors	Assoc. IV			
Rigidity	Form R	Rig.			
<u>Predictor</u>					
I.Q.	Cumulative Records	I.Q.			
Achievement	Cumulative Records	Ach.			
Socio-economic Status	Parent Questionnaires	SES			
Authoritarianism - 1	PARI *		A-M	A-F	A-P
Irritability	PARI *		I-M	I-F	I-P
PARI Total	PARI *		PARI-M	PARI-F	PARI-P
High Punishment	Form PR		hP-M	hP-F	hP-P
Low Reward	Form PR		1R-M	1R-F	1R-P

* Short Form

TABLE III (Continued)

Variable	Source	Student	Mother	Father	Parents
Low Reward- High Punishment Combined	Form PR		PR-M	PR-F	PR-P
High Direct Object Methods	Form PR		hDO-M	hDO-F	hDO-P
Low Symbolic Love Method	Form PR		1SL-M	1SL-F	1SL-P
Punitive Control**	Factor Analysis of PARI and Form PR		FI-M	FI-F	FI-P
Authoritar- ian Attitude	Factor Analysis of PARI and Form PR		FII-M	FII-F	FII-P

** The intercorrelations between Form PR and the PARI (short form) and the results from the principal-components factor analysis which yielded the factor scores called Punitive Control and Authoritarian Attitude may be found in Appendix D.

First Prediction. SES and the Paragraph Completion Test.

A statistically significant positive relationship exists between socio-economic status and the social domain of conceptual complexity as measured by the Schroder's Paragraph Completion Test.

Table IV indicates an $F=9.804$ which was significant at the .002 level of significance had a positive regression weight. Accordingly this prediction was supported when the interaction variables were absent. Table VI indicates an $F=14.3203$ which was significant at the .0001 level of significance and had a positive regression weight. Accordingly the prediction was also supported when the interaction variables were present.

TABLE IV
PCT TOTAL AS CRITERION WITHOUT INTERACTION VARIABLES

Rank	Variable	F ratio*	Level of Significance	Sign of the Weights
1	SES	9.804	.002	+
2	$(PR-P)^2$	5.760	.017	-
3	Achievement	4.977	.027	+
4	$(PR-F)^2$	4.334	.039	-
5	$(1R-M)^2$	3.893	.049	+

* df = 1,203; RSQ = .21309

TABLE V
ASSOCIATION IV AS CRITERION - WITHOUT INTERACTION
VARIABLES

Rank	Variable	F ratio*	Level of Significance	Sign of Weights
1	SES	26.476	.000	+
2	$(FI - F)^2$	3.767	.054	-

* df = 1,203; RSQ = .23386

TABLE VI
PCT TOTAL AS CRITERION WITH INTERACTION VARIABLES

Rank	Variable	F ratio*	Level of Sign.	Sign of Weight	Correla- tion Between Inter- actions
1	SES	14.3202	.000	+	
2	I.Q. (hP-F) **	5.5418	.019	+	.019***
3	(hP-M) (1R-F)	4.7824	.030	-	.139
4	(PR-M) (PR-F)	3.5474	.061	-	.463

* df full model 1,236; RSQ = .38866

** All parent variables are squared and the interactions are the product of the squared terms

*** .05 significance level for $r = 0$, $p \leq .122$.

TABLE VII
ASSOCIATION IV AS CRITERION WITH INTERACTIONS
VARIABLES

Rank	Variable	F ratio*	Level of Sign.	Sign of Regres- sion Weight	Correla- tion Between Inter- actions
1	SES	15.0380	.000	+	
2	I.Q. (hP-M) **	6.4242	.012	+	.025***
3	I.Q. (PR-M)	4.7182	.031	+	.020
4	I.Q. (hP-P)	4.5439	.034	+	.160
5	I.Q. (SES)	4.0717	.045	+	.046

* df = 1,236; RSQ = 28.611

** All parent variables are squared

*** Significance level for $r = 0$, $p \leq 0.122$; Pearson r

Second Prediction. SES and the Associations IV Test.

A statistically significant positive relationship exists between socio-economic status and the intellectual domain of conceptual complexity as measured by the Associations IV Test.

Table V shows an $F = 26.476$ for SES which was significant at below the .00001 level and had a positive regression weight. Accordingly the prediction was supported at the .05 level of significance when interaction variables were not present.

Table VII shows an $F = 15.038$ for SES which was significant at the .0001 level and had a positive regression

weight. Accordingly the prediction was supported at the .05 level of significance when the interaction variables were present.

Third Prediction. SES and Rigidity (Form R).

A statistically significant negative relationship exists between socio-economic status and rigidity as measured by Form R.

No table was presented for the test on rigidity as none of the measured obtained an F ratio reaching the .05 significance level. An $F = 1.1242$ was obtained for SES with $p = .290$ when the interaction variables were present. Accordingly the prediction was not supported.

Fourth Prediction. Parental Reward-Punishment and the Paragraph Completion Test.

A statistically significant relationship exists between punishment-reward and the social domain of conceptual complexity.

Table IV indicates that for $(PR-P)^2$ measure an $F = 5.760$ was obtained and was significant at the .017 level with a negative regression weight. Accordingly the prediction was supported at the .05 level of significance for the squared punishment and reward combined $[(PR-P)^2]$ scales of Form PR for the family unit.

Table IV also indicates that for the $(PR-F)^2$ an $F = 4.3343$ was obtained and was significant at the .034 level with a positive regression weight. Accordingly the prediction was supported at the .05 level of significance

for the squared punishment-reward combined scales $[(Pr-F)^2]$ of Form PR.

Table VI indicates that for the interaction between $(hP-M)^2$ and $(1R-F)^2$, the $F = 4.7824$, which was significant at the .030 level with a negative regression weight, when interactions are present. No comment is offered at the present time regarding interactions which are tantalizing but may not reappear in a replication of this study using different groups.

Fifth Prediction. Parental Reward-Punishment and the Associations IV.

A statistically significant relationship exists between reward-punishment and the intellectual domain of conceptual complexity.

Table V shows that none of the punishment variables taken alone were significant at the .05 level of significance. Accordingly the prediction was not accepted when interactions are not present. However, it was noted that $(FI-F)^2$ obtained an $F = 3.767$ with $p = .054$ which approaches the .05 level of significance.

Table VII indicates significant F ratios for the following interaction variables:

I.Q. $(hP-M)^2$ $F = 6.424$, $p = .012$

I.Q. $(PR-M)^2$ $F = 4.718$, $p = .031$

I.Q. $(hP-P)^2$ $F = 4.544$, $p = .034$

All are significant at the .05 level. No conclusion is

drawn about this prediction when the interaction variables are present.

CHAPTER V

CONCLUSIONS AND SUMMARY

Conclusions

The conclusions with regard to the predictions are presented under two classifications, those dealing with socio-economic status and those dealing with the punishment-reward variables.

Socio-economic Status. Inspection of Tables IV through VII indicates that socio-economic status was found to be the most important variable ($p \leq .002$ in all cases) in each analysis, and that a positive relationship existed since the sign of the regressions weights were positive. Therefore, it was concluded that the first and second predictions were supported and a positive linear relationship exists between socio-economic status and the intellectual and social domains of conceptual complexity. No conclusion was drawn about the relationship between conceptual complexity and rigidity as none of the variables reached the .05 level of significance.

Punishment and Reward. The fourth prediction that a significant relationship existed between parental punishment and reward and the social domain of Conceptual Complexity was supported by the data in Table IV, although it must be recognized that they were of the curvilinear

type. Parents combined high-punishment and low-reward scales squared $[(PR-P)^2]$, Father's combined high-punishment and low-reward scales squared $[(PR-F)^2]$, and Mother's low-reward scale squared $[(1R-M)^2]$ reached, respectively, the .002, .039 and .049 levels of significance.

Further, it was noted that the first two variables had negative regression weights which designated the relationships as hyperbolic in nature. The latter variable, Mother's low-reward scale squared $[(1R-M)^2]$, had a positive regression weight, which indicated this relationship was parabolic in nature.

No conclusions were drawn about prediction five, that a significant relationship exists between Parental punishment and reward patterns and the intellectual domain of Conceptual Complexity. Three of the I.Q. and Parental squared interaction variables, which were included in the second series of analysis as control variables, were significant at the .05 level. These results resisted psychological interpretation.

A few speculations might be made concerning these findings. For theory and research the relationship between SES and complexity may transcend both the intellectual and social domains of complexity. Hence, those variables that in the past have been found to correlate with SES -- values, attitudes, child rearing practices, environmental and cultural deprivation -- may also be correlates of

conceptual complexity. An implication of some importance for practice, particularly in the schools, is that SES may provide a rough measure which will differentiate those "... homogeneous conceptual systems groups for which appropriate educational environments can be matched (Hunt, 1966)."

In the present study, the scattergrams of conceptual complexity and each of the parental punishment-reward were examined. The scattergrams of complexity and punishment suggested a modified parabolic curvilinear relationship, with high punishment being associated with low complexity and low punishment being associated with high complexity. A similar parabolic relationship was observed between complexity and reward, with moderate reward being associated with low complexity and low reward being associated with high complexity. When the scattergrams of the combined reward-punishment scores and complexity were scrutinized, a hyperbolic relationship was observed with high complexity being associated with the interaction of low punishment and low reward and low complexity being associated with high punishment and high reward.

From the above findings, it could be speculated that a nuturant environment for the development of conceptual complexity might be one that is low in parental control, that is, low in reward and low in punishment. This speculation would then conflict with a definition of

a nuturant environment as one which is characterized by high reward and low punishment. If these findings are valid, then it would seem that much more research is needed to determine the exact nature of the relationships and interrelationships between punishment and reward, working independently of each other and together, and the discovery of the optimum mixtures of the two conditions, if in fact they are two separate entities. The present research supports the prediction that there are optimum levels of punishment and reward with regards to the development of social domain of complexity. The question would now seem to be, not whether punishment is bad or destructive, but how much of it is beneficial to the development of complexity.

Summary

The relationships among Social Rigidity, the social and the intellectual domain of Conceptual Complexity of grade seven students, parental punishment-reward patterns, and Parental Personality factors of Authoritarianism and Irritability, were investigated through the testing of five predictions.

A battery of tests consisting of Fitzgerald's Social Rigidity Test, Schroder's Paragraph Completion Test and Guilford's Association IV tests was administered by the writer to all grade seven students present in three

Junior High Schools of the Edmonton Public School Board during the spring of 1969. Testing of the students was followed by the distribution to their parents of a data sheet and two questionnaires: Cross and Kawash's 1968 Short Form of Schaeffer and Bell's Parental Attitude Research Instrument to measure Authoritarianism and Irritability; and the writer's Form PR to measure parental punishment-reward patterns. I.Q. and achievement scores were obtained from the students' cumulative records.

The parental factor scores of Punitive Control and Authoritarian Attitude were obtained through a principal-components factor analysis of the nine scales from the PARI Short Form and four Punishment-Reward scales from Form PR. The combined high-punishment and low-reward scores and the squared parental scores used to test for a curvilinear relationship were generated by the 360-67 computer program MULR/4 (Flathman and Ward, 1968).

From the results, it was concluded that there was a significant positive relationship between the social and intellectual domains of conceptual complexity, while the analysis did not support the prediction of a significant relationship between social rigidity and SES. It was further concluded that a significant curvilinear relationship existed between the following variables: parents' combined high-punishment and low-reward; father's combined high-punishment and low reward; mother's low-reward; and the social domain of conceptual complexity.

B I B L I O G R A P H Y

BIBLIOGRAPHY

Adorno, T.W., Frenkel-Brunswick, E., Levinson, D.J., and Sanford, R.N. The authoritarian personality. New York: Harper, 1950.

Alexander, M. Relation of environment to intelligence and achievement: A longitudinal study. Unpublished Master's Study, University of Chicago, 1961.

Anderson, C.C., Gardiner, G., and Flathman, D. Factor Analysis of Conceptual Complexity. Unpublished manuscript, University of Alberta, 1968.

Anderson, A., and Moore, O.K. Autotelic folk-models. Technical Report No. 8, Office of Naval Research, Group Psychology Branch, Contract SAR/Nonr. 609 (16), New Haven: 1959. Reprinted in Sociological Quarterly, 1:204-216.

Applezweig, D.G. Some determinants of behavioral rigidity. Journal of Abnormal and Social Psychology, 1954, 49, 224-228.

Baldwin, A.L., Kalhorn, J., and Breese, F.H. The appraisal of parent behavior. Psychological Monograph, 1949, 63, No. 4 (Whole No. 299).

Baldwin, A.L., Kalhorn, J., and Breese, F.H. Patterns of parent behavior. Psychological Monograph, 1945, 58, No. 3 (Whole No. 268).

Becker, W.C., and Krug, R.S. The parent attitude research instrument -- a research review. Child Development, 1965, 36, 329-365.

Becker, W.C. Consequences of different kinds of parent disciplines. In M.L. Hoffman and L.W. Hoffman (Eds.), Review of child development research. Vol. 1. N.Y. Russel Sage Foundation, 1964.

Bell, R.Q., and Schaefer, E.S. Informal notes on the use of PARI. Unpublished manuscript, National Institutes of Mental Health, 1960. In Cross, H.J. and Kawash, G.F. A short form of PARI to assess authoritarian attitudes toward child rearing. Psychological Reports, 1968, 23, 91-98.

Bettelheim, B. Children must learn to fear. The New York Times Magazine, April 13, 1969, 125, 135-145.

Blishen, B.R. A socio-economic index of occupations. The Canadian Review of Sociology and Anthropology, 1967, 4, 41-53.

Bottenberg, R. and Ward, J. Applied Multiple linear regression. Washington: U.S. Department of Commerce, Document PRL-TDR-63-6, 1963.

Bower, A.C. Cognitive complexity and classification rule learning. Unpublished doctoral dissertation, University of Alberta, 1969.

Brady, J.V. Ulcers in "executive monkeys." Scientific American, 1958, 199, 95-103.

Bronfenbrenner, U. "Socialization and Social Class through time and space," in Eleanor E. Maccoby, Newcomb, T.M., Hartley, E.L. (Eds.), Readings in Social Psychology, New York: Henry Holt & Co., 1958.

Brooks, S.A. Group composition and satisfaction in group function: The contribution of abstractness of personality structure and ascendancy. Unpublished senior thesis, Princeton University, 1962. In Schroder, H.M., Driver, M.J., and Streufert, S. Human Information Processing. New York: Holt, Rinehart, and Winston, Inc., 1967.

Brown, R.W. A determinant of the relationship between rigidity and authoritarianism. Journal of Abnormal Social Psychology, 1953, 48, 469-476.

Bruner, J.S. Toward a theory of instruction. Cambridge: Belknap Press, 1966.

Church, R.M. The varied effects of punishment on behavior. Psychological Review, 1963, 70, 369-402.

Cowen, E.L., Wiener, M. and Hess, H. Generalization of problem-solving rigidity. Journal of Consulting Psychology, 1953, 17, 100-103.

Cowen, E.L. and Thompson, G.G. Problem solving rigidity and personality structure. Journal of Abnormal and Social Psychology, 1951, 46, 165-176.

Cross, H.J. and Kawash, G.F. A short form of PARI to assess authoritarian attitudes toward child rearing. Psychological Reports, 1968, 23, 91-98.

Crouse, B., Karlins, M. and Schroder, H. Conceptual complexity and marital happiness. Journal of Marriage and the Family. 1968, 30, 643-646.

Cruze, W.W. Maturation and learning in chicks. Journal of comparative Psychology, 1935, 19, 371-409.

Curry, R.L. The effect of socio-economic status on the scholastic achievement of sixth grade children. British Journal of Education, 1962, 32, 46-49.

Deese, J. The psychology of learning. New York: McGraw-Hill, 1958.

Dennis, W. and Najarian, P. Infant development under environmental handicap. Psychological Monograph, 1957, 71, No. 7.

Duval, E.M. Conceptions of Parenthood, American Journal of Sociology, LII, November, 1946, pp. 193-203.

Flathman, D. Hypothesis testing with multiple regression. Edmonton: Educational Research Services, University of Alberta, Document, November, 1968.

French, E.G. Interrelations among some measures of rigidity under stress and non-stress conditions. Journal of Abnormal and Social Psychology, 1955, 51, 114-118.

Frost, L. The interaction between personality structure and information load in group functioning. Unpublished senior thesis, Princeton University, 1963.

Gantt, W.H. Experimental basis for neurotic behavior. New York: Hoeber, 1944.

Gardiner, G.S. Some correlates of cognitive complexity. Unpublished Master's thesis, University of Alberta, 1968.

Goodstein, L.D. Intellectual rigidity and social attitudes. Journal of Abnormal and Social Psychology, 1953, 48, 345-353.

Harman, H.H. Modern factor analysis. Chicago: University of Chicago Press, 1960.

Hart, I. Maternal child-rearing practices and authoritarian ideology. Journal of Abnormal Social Psychology, 1957, 55, 232-237.

Harvey, O.J. (Ed.), Experience, structure and adaptability. New York: Springer, 1966.

Harvey, O.J., Hunt, D.E., and Schroder, H.M. Conceptual systems and personality organization. New York: Wiley, 1961.

Hebb, D.O. The innate organization of visual activity: II. Transfer of response in the discrimination of brightness and size of rats reared in total darkness. Journal of Comparative Psychology, 1937, 24, 277-299.

Hewitt, F.M. Educational Engineering with the emotionally disturbed child. Exceptional Children, 1967, 33, 459-467.

Hill, E.H., and Giannatto, M.C. Socio-economic status and its relationship to school achievement in the elementary school. Elementary English, 1963, 40, 265-270.

Hunt, D.E., and Dopyera, J. Personality variation in lower class children. The Journal of Psychology, 1966, 62, 47-54.

Inhelder, B. and Piaget, J. The early growth of logic in the child. London: Routledge and Kegan Paul, 1964.

Inkeles, A. Industrial Man: The Relation of Status to Experience, Perception, and Value. American Journal of Sociology, LXVI, July, 1960, 20-21.

Karlins, M., Streufert, S., and Schroder, H.M. A controlled input program for a tactical war game. American Documentation Institute, Auxiliary Publications Project, Library of Congress. No. 8621, 1965. In Schroder, H.M., Driver, M.J., and Streufert, S. Human information processing. New York: Holt, Rinehart, and Winston, Inc., 1967.

Kirk, S.A. Early education of the mentally retarded. Urbana: University of Illinois Press, 1958.

Klackholn, M., Kohn, M.L. Social Class and Parental Values. American Journal of Sociology, 1959, 64, 337.

Kohn, M.L. Social class and Parent-Child Relationships: An Interpretation. American Journal of Sociology, 1963, 68, 4, January, 471-480.

Kohn, M.L. Social Class and Parental Values. American Journal of Sociology, 1959, 64, 337-351.

Kohn, M.L., Caral, E. Social Class and the Allocation of Parental Responsibilities, Sociometry, 1960, 23, 372-392.

Krasner and Ullman, Changes in intensity of Punishment: Effect on running behavior in rats. Science, 1963, 140, 1084-1085.

Krech, D. The effects of an enriched environment on the histology of the rat cerebral cortex. Paper presented at the University of Alberta, January, 1965.

Lawrence, E.A. An investigation of some relationships between personality structure and group functioning. Unpublished senior thesis, Princeton University, 1962. In Schroder, H.M., Driver, M.J., and Strefert, S. Human information processing. New York: Holt, Rinehart, and Winston, Inc., 1967.

Lee, E.S. Negro intelligence and selective migration: a Philadelphia test of the Kineberg Hypothesis. American Social Review, 1951, 16, 227-233.

Luchins, A.S. Rigidity and ethnocentrism: a critique. Journal of Personality, 1949, 17, 467-474.

Maier, W.R.F. Frustration: The study of behavior without a goal. New York: McGraw-Hill, 1949.

Manley, D.R. Mental ability in Jamaica. Social and Economic Studies. Institute of Social and Economic Research, U.W.I., Jamaica, 1959, 12, 51-71.

Masserman, J.M. and Pechtel, C. Neurosis in monkeys: A preliminary report of experimental observations. Ann., New York Academy of Science, 1953, 56, 253-265.

Masserman, J.M. Behavior and neurosis. Chicago: University of Chicago Press, 1943.

Moulton, R.W., Burnstein, E., Liberty, P.G., and Altucher, N. Patterning of Parental affection and disciplinary dominance as a determinant of guilt and sex typing. Journal of Personality and Social Psychology, 1966, 4, 353-363.

Peck, R.F. Family patterns correlated with adolescent personality structure. Journal of Abnormal Social Psychology, 1958, 57, 347-350.

Radke, M.H. The relation of parental authority to children's behavior and attitudes, University of Minnesota Institute of Child Welfare Monograph, Series No. 22, 1946. In Harvey, O.J., Hunt, D.E., and Schroder, H.M. Conceptual Systems and personality organization. New York: Wiley, 1961.

Riesen, A.H. The development of visual perception in man and chimpanzees. Science, 1947, 106, 107-108.

Riesen, A.H., Kurke, M.I., and Melinger, J.C. Intervocular transfer of habits learned monocularly in visually naive and visually experienced cats. Journal of Comparative Physiological Psychology, 1956, Vol. 49, 516-520.

Rokeach, M. Generalized mental rigidity as a factor in ethnocentrism. Journal of Abnormal and Social Psychology, 1948, 43, 259-278.

Rubenowitz, S. Emotional flexibility-rigidity as a comprehensive dimension of mind. PA Council Report NR 34, 1963.

Schaie, K.W. A test of behavioral rigidity. Journal of Abnormal and Social Psychology, 1955, 51, 604-610.

Schmidt, H.O., Fonda, C.P., and Wesley, E.L. A note on the consistency of rigidity as a personality variable. Journal of Consulting Psychology, 1954, 18, 450.

Schroder, H.M., Driver, M.J., and Streufert, S. Human information processing. New York: Holt, Rinehart and Winston, 1967.

Schroder, H.M., Streufert, S., and Weeden, D.C. The effect of structural abstractness in interpersonal stimuli on the leadership role. DNR Technical Report No. 3, Princeton University, 1964. In Schroder, H.M., Driver, M.J., and Streufert, S. Human information processing. New York: Holt, Rinehart, and Winston, Inc., 1967.

Schroder, H.M., and Harvey, O.J. Conceptual organization and group structure. In O.J. Harvey (Ed.), Motivation and Social interaction: Cognitive determinants, New York: The Ronald Press, 1963, 136-166.

Sears, R.R., Maccoby, E.E., and Lewin, H. Patterns of Child Rearing. New York: Harper and Row, 1957.

Suedfeld, P. Attitude manipulation in restricted environments: 1. Conceptual structure and response to propaganda. Journal of Abnormal Social Psychology, 1964, 68, (3), 242-246.

Sieber, J.E., and Lanzetta, J.T. Some determinants of individual differences in predecision information processing behavior. Journal of Personality and Social Psychology, 1966, 4, 561-571.

Siegel, A.I. Deprivation of visual form definition in the ring dove: Perceptual-motor transfer. Journal of Comparative Physiology and Psychology, 1953, 46, 249-252.

Siegelman, M. Loving, and Punishing Parental Behavior and Introversion Tendencies in Sons. Child Development, 1966, 37, 985-992.

Solomon, R.L. Punishment. American Psychologist, 1964, 19, 239-253.

Solomon, R.L., and Brush, E.S. Experimentally derived conceptions of anxiety and aversion. In M.R. Jones (Ed.), Nebraska Symposium on Motivation, 1956, Lincoln: University of Nebraska Press, 1956.

Sontag, L., Baker, C., and Nelson, V. Mental growth and personality: A longitudinal study. Monograph of Social Research of Child Development, 1958, 23, 1-143.

Stewin, L.L. Set characteristics of conceptual systems. Unpublished doctoral dissertation, University of Alberta, 1969.

Stewin, L.L. The nature of rigidity as determined by Vygotsky test performance. Unpublished Master's thesis, University of Alberta, 1968.

Streufert, S., Graber, J., and Schroder, H.M. Performance and perceptual complexity in a tactical decision-making task. ONR Technical Report No. 4, Princeton University, 1964.

Streufert, S., Clardy, M., Driver, M.J., Karlins, M., Schroder, H.M., and Suedfeld, P. A tactical game for the analysis of complex decision making in individuals and groups. Psychological Reports, 1965, 17, 723-729.

Streufert, S., Clardy, M., Driver, M.I., Karlins, M., Schroder, H.M., and Suedfeld, P. A tactical game for the analysis of complex decision making in individuals and groups. Psychological Reports, 1965, 17, 723-729. In Schroder, H.M., Driver, M.J., and Streufert, S. Human information processing. New York: Holt, Rinehart, and Winston, Inc., 1967.

Streufert, S., Graber, J., and Schroder, H.M. Performance and perceptual complexity in a tactical decision-making task. ONR Technical Report No. 4, Princeton University, 1964. In Schroder, H.M., Driver, M.J., and Streufert, S. Human information processing. New York: Holt, Rinehart, and Winston, Inc., 1967.

Symonds, P.M. The psychology of parent-child relationships. New York: Appleton-Century-Crofts, 1939.

Thompson, W.R., and Melzack, R. Early environment. Scientific American, January, 1956, No. 469.

Warden, C.J. and Ayksworth, M. The relative value of reward and punishment in the formation of a visual discrimination habit in the white rat. Journal of Comparative Psychology, 1927, I, 117-127.

Wheeler, L.R. A comparative study of intelligence of East Tennessee mountain children. Journal of Educational Psychology, 33, 1942, 321-334.

Whiting, J.W.M. and Mowrer, O.H. Habit progression and regression -- a laboratory study of some factors relevant to human socialization. Journal of Comparative Psychology, 1943, 36, 229-253.

Witkin, Dyk, Faterson, Goodenough and Karp in Psychological differentiation. New York: Wiley, 1962.

Wolpert, E.A. A new view of rigidity. Journal of Abnormal and Social Psychology, 1955, 51, 589-593.

Zelen, S. Goal-setting rigidity in an ambiguous situation. Journal of Consulting Psychology, 1955, 19, 395-399.

A P P E N D I X A

Student Tests

NAME _____

PCT

On the following pages, you will be asked to complete certain sentences.

Complete the word or phrase at the top of each page in two or three sentences -- or more, if you feel this is necessary.

You will be given 2 minutes to complete each word or phrase.

Have you any questions?

DO NOT OPEN THE BOOKLET UNTIL YOU ARE INSTRUCTED TO BEGIN

1. "Rules . . .

2. "When I am in doubt . . .

3. "Confusion . . .

4. "Parents . . .

5. "When I am criticized . . .

6. "When others criticize me it usually means . . .

Name _____

ASSOCIATIONS IV

The items in this test consist of pairs of words. Your task is to think of a word that is associated with both of the given words. The associated word must have a different meaning in its relation to each of the given words.

Look at the following example:

jewelry ring bell

The associated word "ring" has been written in the blank space between the given words. It has a different meaning in connection with each of the words. It is a piece of jewelry but it is also the sound of a bell.

Try the next example:

The associated word is "magazine" since it can be displayed at a newsstand or it can be a storehouse for ammunition.

The remaining items should be worked in the same manner. Work rapidly, but be sure that your answer has TWO meanings.

This test consists of two parts, each containing 15 items. You will have 7 minutes working time for each part. Are there any questions?

DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO

PART I (7 minutes)

1. emerald	_____	rookie
2. theater	_____	fishing
3. card	_____	ship
4. clothes	_____	law
5. railroad	_____	electricity
6. music	_____	tent
7. eye	_____	pig
8. postman	_____	knight
9. stove	_____	card game
10. shepherd	_____	steal
11. hibernation	_____	porter
12. river	_____	money
13. duel	_____	time
14. cigarette	_____	tree
15. cheese	_____	pencil

DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO

STOP

PART II (7 minutes)

16.	kitchen	boat
17.	baseball	airplane
19.	bird	dollar
20.	radio	toothpaste
21.	music	fish
22.	girl	by-pass
23.	hammer	finger
24.	store	cavalry
25.	wind	recruits
26.	football	examination
27.	fence	union
28.	winter	pepper
29.	candy	money
30.	sum	nobility

DO NOT GO BACK TO PART I AND

DO NOT GO ON TO ANY OTHER TEST UNTIL ASKED TO DO SO.

STOP.

FORM R

Instructions

This questionnaire contains statements about the way different people behave, feel and act.

Read each of the statements carefully, decide how you feel about it, and then mark your answer on the answer sheet provided.

If you agree with the statement or feel that it applies to you, circle TRUE. If you disagree with the statement or feel that it does not apply to you, circle FALSE. There is no right or wrong answer to any question.

You will find that the statements are about things on which people have different opinions, or about ways of acting which differ widely in our society. The best answer is the one that reflects your opinion, or your way of behaving. Be sure to answer every statement, even if you have to guess at some.

Since your first response will usually be the best indication of your opinion, try to work as fast as possible and do not change your answers unless you feel that you have misread the question. There is no time limit.

Please be sure to answer all of the questions. If you are in doubt give the answer that applies to you most of the time. Remember there is no right or wrong answer; your opinion is the correct response.

1. I rather enjoy things that are uncertain and unpredictable.
2. I often wish people would be more definite about things.
3. I find that when I work things tend to get somewhat untidy.
4. Our lives would be much happier if words like probably and possibly did not exist.
5. A well-ordered mode of life with regular hours is best suited for my temperament.
6. I crave excitement.
7. My work often appears unplanned and disorganized.
8. I am an easy-going person, not generally bothered about having everything "just-so".
9. I enjoy having frequent changes in the things I do and the people I see.
10. There are many questions to which there are no right or wrong answers.
11. I tend to sympathize with people who are constantly questioning the nature of things.
12. It is annoying to listen to a speaker who cannot seem to make up his mind as to what he really believes.
13. I prefer life to be varied and exciting rather than a smooth routine.
14. I like to feel that things are well planned with nothing left to chance.
15. I am probably not as strict about right and wrong as most people.
16. People who are unsure and uncertain about things make me feel uncomfortable.
17. I am in favor of a very strict enforcement of the law, no matter what the consequences.

18. I believe that strict control of our day to day activities would lead to a better society.
19. It bothers me when something unexpected interrupts my daily routine.
20. I find it difficult to arrange my activities in a very orderly manner.
21. Just for the thrill of it, I have sometimes done something dangerous.
22. I usually have difficulty doing things on a fixed schedule.
23. I do not consider myself a methodical person.
24. I seldom put on or take off my clothes in the same order.

A P P E N D I X B

Parental Questionnaires

"FORM A"

To be filled in by the Father or Male Guardian

Name _____

Age _____ Marital Status _____

Number of children in your family _____

Father's Occupation (please be specific)

Mother's Occupation (please be specific)

Education: of Father

Number of years of high school completed _____

Number of years of technical training
completed _____

Number of years of university completed _____

"FORM B"

To be filled in by the Mother or Female Guardian

Name _____

Age _____ Marital Status _____

Number of children in your family _____

Mother's Occupation (please be specific)

Father's Occupation (please be specific)

Education of Mother

Number of years of high school completed _____

Number of years of technical training
completed _____

Number of years of university completed _____

E.S. SCHAEFER and R.Q. BELL

PARI - Short Form

MOTHERS NAME _____

Instructions: So as not to use too much of your time we have a list of ideas which other parents have contributed. You merely circle one of the four letters by each statement.

A	a	d	D
strongly	mildly	mildly	strongly
agree	agree	disagree	disagree

Indicate your opinion by drawing a circle around the "A" if you strongly agree, around the "a" if you mildly agree, around the "d" if you mildly disagree, and around "D" if you strongly disagree.

There are no right or wrong answers, so answer according to your own opinion. It is very important to the study that all questions be answered. Many of the statements will seem alike but all are necessary to show slight differences of opinion.

Others who have given us their ideas say it is best to work rapidly. Give your first reaction. If you read and reread the statements it tends to be confusing and will take longer than necessary to answer.

If you have any ideas which you feel should be included, jot them down at the end. We would appreciate having them.

1. Children should be allowed to disagree with their parents if they feel their own ideas are better. A a d D
2. When a parent asks a child to do something the child should always be told why. A a d D
3. A child should be taught that there are many other people he will love and respect as much or more than his own parents. A a d D
4. Children should never learn things outside the home which make them doubt their parents' ideas. A a d D
5. Parents very often feel that they can't stand their children a moment longer. A a d D
6. There's no excuse wasting a lot of time explaining when you can get kids doing what you want by being a little clever. A a d D
7. Children have every right to question their parents' views. A a d D
8. A child should grow up convinced his parents always know what is the right thing to do. A a d D
9. Most parents can spend all day with the children and remain calm and even tempered. A a d D
10. Children should be encouraged to tell parents about it whenever they feel family rules are unreasonable. A a d D
11. Parents should adjust to the children some rather than always expecting the children to adjust to the parents. A a d D
12. Most children soon learn that their parents were mistaken in many of their ideas. A a d D
13. There is no excusing someone who upsets the confidence a child has in his parents' ways of doing things. A a d D
14. The things children ask of a parent after a hard day's work are enough to make anyone lose his temper at times. A a d D

15. Often you have to fool children to get them to do what they should without a big fuss. A a d D
16. If a parent is wrong he should admit it to his child. A a d D
17. A child soon learns that there is no greater wisdom than that of his parents. A a d D
18. A parent should keep control of his temper even when children are demanding. A a d D
19. A child's ideas should be seriously considered in making family decisions. A a d D
20. In a well-run home children should have things their own way as often as the parents do. A a d D
21. Loyalty on the part of children to their parents is something that the parents should earn. A a d D
22. A parent should never be made to look wrong in a child's eyes. A a d D
23. It's natural for a parent to "blow his top" when children are selfish and demanding. A a d D
24. It's best to trick a child into doing something he doesn't want to do instead of having to argue with him. A a d D
25. A good parent can tolerate criticism of himself even when the children are around. A a d D
26. Loyalty to parents comes before anything else. A a d D
27. Raising children is an easy job. A a d D
28. When a child is in trouble he ought to know he won't be punished for talking about it with his parents. A a d D
29. As much as is reasonable a parent should try to treat a child as an equal. A a d D
30. A parent should not expect to be more highly esteemed than other worthy adults in their children's eyes. A a d D

31. It's best for the child if he never gets started wondering whether his parents' views are right. A a d D

32. It's a rare parent who can be even tempered with his children all day. A a d D

33. You have to fool children into doing many things because they wouldn't understand anyway. A a d D

34. When a child thinks his parent is wrong he should say so. A a d D

35. More parents should teach their children to have unquestioning loyalty to them. A a d D

36. Most parents never get to the point where they can't stand their children. A a d D

37. A child has a right to his own point of view and ought to be allowed to express it. A a d D

38. Children are too often asked to do all the compromising and adjustment and that is not fair. A a d D

39. Loyalty to parents is an overemphasized virtue. A a d D

40. The child should not question the thinking of his parents. A a d D

41. Raising children is a nerve-wracking job. A a d D

42. When a child is doing something he shouldn't, one of the best ways of handling it is to just get him interested in something else. A a d D

43. A child should be encouraged to look for answers to his questions from other people even if the answers contradict his parents. A a d D

44. A child should always love his parents above everything else. A a d D

45. There is no reason why a day with the children should be upsetting. A a d D

MOTHER'S NAME _____

Instructions

Form PR

One of the problems involved in bringing up children is how we punish and reward children for their behavior. We would like to know how you punish and reward your child.

In answering this questionnaire, please indicate what you actually do, not what you think you should do. To answer, merely circle one of the letters.

Circle: "A" to mean, Yes Very Often

"B" to mean, Often

"C" to mean, Sometimes

"D" to mean, Hardly Ever and

"E" to mean, No, Never

FORM PR

1. I try to reward my child by taking him (her) to places (trips, shows, etc.) when he (she) has been good. A B C D E
2. When a child misbehaves he (she) should be sent to his (her) room or to bed. A B C D E
3. I attempt to make my child feel proud of himself (herself). A B C D E
4. I try to give him (her) adult privileges. A B C D E
5. A good way to punish a child is to take away something he (she) enjoys when he (she) is bad. A B C D E
6. I find that if I make my child feel he (she) isn't loved anymore, his (her) behavior improves. A B C D E
7. Most children should have more discipline than they get. A B C D E
8. An effective way of controlling a (my) child is to spank him (her) when he (she) behaves badly. A B C D E
9. Frightening or threatening a child will often correct him (her) when he (she) has done something wrong. A B C D E
10. I reward my child by letting him (her) off some of his (her) regular chores and jobs. A B C D E
11. Children who are held to firm rules grow up to be the best adults. A B C D E
12. It is at times necessary to severely spank my child when he (she) behaves badly. A B C D E
13. When my child misbehaves it probably means I need to be more strict about rules and regulations. A B C D E
14. I discuss what is good about my child's behavior with him (her) and help him (her) to see clearly the desirable consequences of his (her) actions. A B C D E

15. My child will be grateful later for strict training. A B C D E

16. I let my child stay up longer as a reward. A B C D E

17. Shaming a child in front of his (her) friends can be useful in changing his (her) behavior. A B C D E

18. I make a point of praising him (her) in front of his (her) friends. A B C D E

19. I let my child go to parties or play with others more than usual as a reward. A B C D E

20. Children are actually happier under strict training. A B C D E

21. I sometimes point out how much better other children behave compared to him (her) in order to make him (her) change his (her) behavior. A B C D E

22. I tell my child how ashamed he (she) makes me feel when he (she) misbehaves. A B C D E

23. When he (she) has been very good I reward him (her) by giving him (her) money or increasing his (her) allowance or giving him (her) new things. A B C D E

24. Strict discipline develops a fine strong character. A B C D E

25. I frequently tell my child how proud I am when he (she) does something well. A B C D E

A P P E N D I X C

Letters to Parents

May 24th, 1969

Dear Parent,

We, at the University of Alberta, in cooperation with the Edmonton Public School Board are attempting to study what parents think about how children should be brought up. A lot is written on this subject in various newspapers and magazines. Frequently these articles are not in agreement. We thought it would be a good idea to find out what parents themselves think.

You would be doing us a great favor, if you would take fifteen to twenty minutes of your time to fill in these two sets of questionnaires. One set is to be filled in by the mother and the other set is to be filled in by the father. After completing them, place them in the enclosed envelope and return them to the school. Your answers will be seen only by the researchers at the university, and we hope that you will feel free to be quite frank. Your cooperation in this project is essential if the results are to be meaningful.

We hope that the results from this study will be helpful to educators in designing an educational program that will benefit your's and other's children.

May I take this opportunity to thank you in advance. We hope that you and your husband will find the time to answer and return these questionnaires within the next few days.

Sincerely yours,

Dr. C.C. Anderson,

R.A. Davis,

Department of Ed. Psych.,
University of Alberta

June 12, 1969

FROM: Mr. R.A. Davis, Research Assistant to
Dr. C.C. Anderson,
Department of Educational Psychology
University of Alberta

TO: Parents or Guardians

Dear Parent:

As you know, we are conducting a research project in the Junior High School which your child is attending. In order to complete this project we are hoping you will take 15-20 minutes and complete the enclosed questionnaires, place them in the enclosed envelope and return them to the school before next Friday, June 20th.

We would like you to place your name on the questionnaire so that we can relate your responses with your child's responses on his or her questionnaire. Your child has already filled out questionnaires at school. Once this has been done all questionnaires will be destroyed to guarantee that the information you provide will be kept confidential.

We are attempting to find out the parents' opinions, feelings and attitudes about punishing and rewarding children for their behavior. The topic of punishing and rewarding children has never been satisfactorily studied. Some people feel that it is bad to punish children, others feel that it is good. Many people feel that it is impossible not to punish children while they are growing up.

We hope that your answers will help us answer the above questions. It is extremely important that we have your answers so that we can be sure that we know how the parents in Edmonton feel. Without your answers we will be unable to complete this research.

If you have any questions regarding this research project please feel free to call Mr. Davis at 439-4551 after 5 P.M.

Thank you very much for your time and consideration.

A P P E N D I X D

Results of PARI and Form PR Principal-Component
Factor Analysis

FORM PR AND PARI SHORT FORMS INTERCORRELATIONS

Table IV presents the intercorrelations between the variables derived from the parental questionnaire (Form PR) and the PARI factors of authoritarianism and irritability.

TABLE VIII
INTERCORRELATIONS BETWEEN PARI AND FORM PR

Form PR	PARI								
	Mother			Father			Parents		
	A-M	I-M	PARI-M	A-F	I-F	PARI-F	A-P	I-P	PARI-P
hP	.55	.45	.71	.33	.21	.32	.46	.45	.49
1R	.64	.53	.65	.39	.28	.44	.48	.33	.50
PR	.74	.61	.86	.57	.39	.59	.70	.60	.74
hDO	.40	.55	.58	.04*	.07*	.03*	.04*	.14*	.06*
1SL	.58	.58	.60	.25	.15*	.22	.34	.43	.40

* not significant at $p < .05$ level

As can be seen from Table VIII moderate correlations between measures of Form PR and the PARI Short Form were found with the highest occurring between the combination of high punishment and low reward (PR) and the combination of authoritarianism and irritability (PARI) scores. Overall, the mothers intercorrelations were considerably higher than either of the fathers' or parents' (combined family unit) intercorrelations. The direct-object method scores,

while significant for the mother's scores, did not reach significance ($p < .05$) for either the father's or parent's scores.

While three factors had eigenvalues greater than one, only the first two factors were interpreted. Table IX (Mothers) and Table X (Fathers) shows the two varimax rotated factors, their communalities, the variance contributed by each scale to the factors, and the variance accounted for by each factor. Mothers and Fathers factor are considered together since they are believed to be nearly the same.

Factor I, which accounts for 54.26 per cent of the common variance for mothers and 50.22 per cent for fathers would seem to be described primarily by the punishment scales. Parents rating high on this factor could be described as demanding high obedience, and attempting to exclude any interference from outside the home. In order to maintain control over the child they make use of deception and both methods of punishment, as opposed to reward as a method of control. It is also noted that of the two factors, Factor I is positively correlated (FI-M, $r=.13$; and FI-F, $r=.24$) with the irritability scales of the PARI. It is noted also that both parents Factor I scores are moderately correlated (FI-M, $r=+.40$; FI-F, $r=.47$) with socio-economic status. This scale might be described as "punitive control".

Factor II is determined primarily by four of the PARI scales; low encouraging verbalization, high excluding outside influences, low equalitarianism, and high deification. These are previously described as being measures of authoritarianism (Cross and Kawash, 1968). It is further distinguished by the presence of low symbolic-love reward scale, which makes sense if one considers that non-authoritarian parents are more likely to use a high amount of symbolic-love reward in shaping their children's behavior. While for the mothers there is no significant relationship between PARI, irritability scales on Factor II, it is noted that the Fathers Factor II is significantly negatively correlated ($r=-.18$, $p < .05$) with irritability and with socio-economic status (FII-F, $r=.21$). Factor I might be best described as a measure of "authoritarian" attitude.

TABLE IX

FACTOR ANALYSIS OF FORM PR AND PARI SHORT FORM SCALES FOR MOTHERS VARIMAX ROTATION

Scale	Factor I	Contribution to Variance of Factor I	Factor II	Contribution to Variance of Factor II	Contribution to Variance of Factor III	Commonalities
1. Low Encouraging Verbalization	104*	-0.12	740	229	559	
2. Low Equalitarianism	-1.38	0.20	696	211	503	
3. High Reversed Deification	-0.93	0.09	641	220	419	
4. High Excluding Outside Influence	6.39	0.97	265	062	479	
5. High Irritability	2.49	0.42	-0.96	-604	071	
6. High Deception	6.52	1.11	-1.74	0.32	455	
7. High Reversed Excluding Outside Influence	2.82	0.54	717	205	594	
8. High Deification	7.07	2.29	102	-0.37	510	
9. High Reversed Irritability	-1.94	0.24	0.96	0.01	047	
10. Low Direct-Object Reward	+6.46	1.29	146	-0.10	439	
11. High Direct-Object Punishment	5.61	0.70	0.99	0.08	324	
12. Low Symbolic-Love Reward	-1.81	0.15	4.92	1.31	275	
13. High Symbolic-Love Punishment	6.96	2.22	0.38	-0.01	4.86	
Column Sums of Squares		2.800	2.366	5.161		
Per Cent Common Variance		54.26	45.74	100.00		
Per Cent of Total Variance		21.54	18.20	39.74		

* All decimals are dropped

TABLE X

FACTOR ANALYSIS OF FORM PR AND PARI SHORT FORM SCALES FOR FATHERS VARIMAX ROTATION

Scale	Factor I	Contribution to Variance of Factor I	Factor II	Contribution to Variance of Factor II	Commonalities
1. Low Encouraging Verbalization	173*	018	732	215	566
2. Low Equalitarianism	-035	-001	611	151	375
3. High Reversed Deification	-054	001	622	169	441
4. High Excluding Outside Influence	602	152	430	050	548
5. High Irritability	270	016	-324	070	178
6. High Deception	607	130	080	-004	375
7. High Reversed Excluding Outside Influence	241	-004	751	234	623
8. High Deification	644	108	435	171	604
9. High Reversed Irritability	095	000	126	-003	025
10. Low Direct-Object Reward	+683	208	233	054	521
11. High Direct-Object Punishment	636	185	061	-001	409
12. Low Symbolic-Love Reward	-232	032	448	104	254
13. High Symbolic-Love Punishment	672	143	028	-003	453
Column Sums of Squares	2.698	2.674	5.372		
Per Cent Common Variance	50.22	48.78	100.00		
Per Cent of Total Variance	20.75	20.57	41.32		

* All decimals are dropped

B29919